War Story

Deployment of Network Time Protocol (NTP) in the GM plant environment.

Why did you use it?

Three major GM initiatives have begun this year that promote the standardization of time synchronization in the plants. These are:

- NTP defined as the GM standard for Time Synchronization
- The new WAN solution providing a standard time source at each GM location
- Consistent Plant Technical Architecture (CPTA)

Currently, there are plants that have implemented time synchronization in their environment, such as Ste. Therese, Doraville, and Saturn. Conversely, many plants are not utilizing any automated process to synchronize all their systems. In many instances, the clock time for the servers are set manually at startup and because of the drift in the cpu clocks over time, the servers and routers do not maintain a consistent time.

How are you we using it?

For GM, NTP is used to synchronize Unix Servers, NT Servers, Workstations, and routers. The Unix Servers, NT Servers, Workstations, and routers are time synched to a Primary and Secondary (Backup) Time Source that is located at the plant. The NTP daemons running on the time sources respond to time requests from the synchronize Unix Servers, NT Servers, Workstations, and routers. The primary and secondary time sources at the plant time synch to time sources over the Wide Area Network. With this configuration the WAN traffic is minimized.

What worked, What didn't?

A deployment document is used to help the plant personnel install and configure the time synchronization environment. In the UNIX environment, GM is using the NTP software that is part of the operating system. For NT, GM is using Microsoft's Timeserv service or Tardis. For Cisco routers, NTP is packaged as part of the IOS. Currently NTP is not supported in the IBM MVS environment and some routers used at GM do not support NTP.

Any Benefits?

Some of the overall benefits of having the master time clock, all servers, and routers time synched to a consistent GM time include:

- Accurate time stamp for data reporting
- Eliminating any manual effort to time synchronize the systems
- Eliminating any labor issues regarding inaccuracies of the time keeping system
- Reducing the potential loss of data when recovering after a server failure
- Reducing the time in debugging systems
- Providing the infrastructure for future data warehousing projects

What needs to be done?

All plants (globally) will need to be using NTP to time synch their UNIX, NT and router environment. Interfacing the plant master clock to the local plant time sources and setting up the IBM MVS systems to synch to a time source also need to be completed.

Issues?

1. Introducing a new technology (NTP) to drive the plant master clock.
2. Developing a low cost solution for the IBM MVS environment.
3. Establishing time synchronization as a priority for plants to implement

Suggested Validation?

Monitoring the completion of time synching in the plants will be through a script that will request time from each plant primary time source. The output is then reviewed for compliance.